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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,777	09/22/2000	Mitsuaki Komino	08038.0044	1267

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EXAMINER

ZERVIGON, RUDY

ART UNIT PAPER NUMBER

1763

DATE MAILED: 11/06/2002

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/667,777

Applicant(s)

KOMINO ET AL.

Examiner

Rudy Zervigon

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sagusa et al (JP09-165681)¹. Sagusa teaches an electrode (Figure 1B, 4) including:

- i. A heater (“sheath heater 11”; [0011] computer translation) arranged in a plane
- ii. An upper and lower ceramic-metal composite (12, “cordierite (2MgO, 2Al₂O₃, and 5SiO₂) of ceramics” [0012]) arranged above and below the heater (Figure 1B)
- iii. Wherein the heater and the upper and lower ceramic-metal composite are cast in a base metal (“aluminum rolled stock 13” [0011])

3. Claims 6, 8, 11, 16, 19, and 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Hirano et al (USPat. 6,120,661). Hirano teaches a susceptor (Figure 1A; column 11, lines 18-40) in a processing vessel (20, Figure 2) including:

- i. A heater (15) arranged on a plane including piping (16; column 12, lines 32-36)
- ii. A upper and lower ceramic-metal composite (12, “matrix”; column 11, lines 34-38) arranged above and below the heater
- iii. An electrostatic chuck (13, column 11, lines 24-26) for holding an object to be treated

¹ Computer translation from <http://www1.ipdl.jpo.go.jp/PA1/cgi-bin/PA1INDEX> provided.

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- iv. The electrostatic chuck having a coefficient of linear thermal expansion substantially the same as that of the upper ceramic-metal composite and being joined to an upper ceramic-metal composite (column 12, lines 1-36)
- v. The upper ceramic metal composite (130A; Fig.) and the electrostatic chuck are brazed together (column 14, lines 20-25)

Hirano further teaches a high frequency power electrode (90A, Figure 14B; column 31, lines 18-28; column 29, line 67) including

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 5, 7, 12, 13, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano et al (USPat. 6,120,661) in view of Sagusa et al (JP09-165681). Hirano teaches a high frequency power electrode (90A, Figure 14B; column 31, lines 18-28; column 29, line 67) including:

- i. A heater (215) arranged on a plane
- ii. A core metal plate (17B) arranged parallel to the plane and adjacent the heater
- iii. The heater and the core metal plate are cast in a ceramic (213; column 30, lines 2-6)

Hirano et al differs from the present invention in that the heater and the core metal plate are encased in a ceramic (213; column 30, lines 2-6), not a metal.

The teachings of Sagusa are discussed above.

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It would have been obvious for one of ordinary skill in the art at the time the invention was made to replace Sagusa's ceramic-metal composite (12, "cordierite (2MgO , $2\text{Al}_2\text{O}_3$, and 5SiO_2) of ceramics" [0012]) and heater with Hirano's electrode (90A) incased in Sagusa's base metal ("aluminum rolled stock 13" [0011]).

Motivation for Hirano to encase his electrode in Sagusa's base metal is taught by Sagusa as preventing "gas discharge within vacuum devices" ([0017]).

6. Claims 3, 4, 14, 15, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano et al (USPat. 6,120,661) and Sagusa et al (JP09-165681), as applied to claims 2, 5, 7, 12, 13, and 17, and further in view of Wang et al (USPat. 5,755,886). Hirano and Sagusa do not teach a core metal plate comprising a plurality of base metal communication holes and such that the base metal is configured to adopt a shower head portion that supplies a gas. Wang teaches a gas manifold system (122, Figure 12).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to add borings for passing process gas and purge gas services to the apparatus of Hirano and Sagusa as taught by Wang.

Motivation for Hirano and Sagusa to add borings for passing process gas and purge gas services as taught by Wang is to provide for an even distribution of process gas across the surface of the wafer (column 4, lines 59-67).

7. Claims 9, 10, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano et al (USPat. 6,120,661). Hirano does not teach alternative methods, including forge-

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welding and adhering, for bringing together the upper ceramic metal composite and the electrostatic chuck beyond brazing as discussed above.

It would have been obvious for one of ordinary skill in the art at the time the invention was made for Hirano to use alternative methods for bringing together the upper ceramic metal composite and the electrostatic chuck.

Motivation for Hirano to use alternative methods for bringing together the upper ceramic metal composite and the electrostatic chuck is drawn to equivalent and well known techniques for bringing together apparatus parts.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano et al (USPat. 6,120,661) in view of Fukasawa et al (USPat. 5,310,453). Hirano is discussed above. Hirano does not teach a heat transfer gas provided at the surface of the chuck. Fukasawa teaches a wafer support table (20, Figure 1) including a chuck electrode (10) with a heat transfer gas applied at its surface (column 6, lines 18-30).

It would have been obvious for one of ordinary skill in the art at the time the invention was made for Hirano provide a heat transfer gas at the surface of the chuck to enable temperature control of the wafer as taught by Fukasawa (column 6, lines 20-23).

Motivation for Hirano provide a heat transfer gas at the surface of the chuck to enable temperature control of the wafer as taught by Fukasawa for compensating heat between the chuck and the wafer W.

9. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watmough (USPat. 4,404,262) in view of Sagusa et al (JP09-165681).

Watmough teaches a method for manufacturing a metal-ceramic composite including:

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- i. Placing porous ceramics (12, column 3, lines 10-25) in a mold (22, Figures 1-8)
- ii. Pouring a molten base metal (26) into the mold to cast porous ceramic with the base metal, thereby infiltrating the porous ceramic with the base metal in order to form a ceramic-metal composite (column 3, line 66 – column 4, line 14)

Watmough does not teach placing a heater inside the ceramic prior to the composite forming steps.

The teachings of Sagusa are discussed above. Specifically, Sagusa teaches a heater and the upper and lower ceramic-metal composite are cast in a base metal ("aluminum rolled stock 13" [0011]).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to cast the apparatus of Sagusa following the method of Watmough to form a ceramic-metal composite.

Motivation for Sagusa to follow the teachings of Watmough by forming a ceramic-metal composite is discussed by Watmough as providing added strength (column 1, lines 42-55).

Response to Arguments

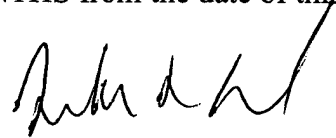
10. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new grounds of rejection.

Conclusion

11. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.



JEFFRIE R. LUND
PRIMARY EXAMINER